



SEQUENCE LISTING

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LAKE, THOMAS P.
SNOW, ALAN D.

<120> SMALL PEPTIDES FOR THE TREATMENT OF ALZHEIMER'S DISEASE
AND OTHER BETA-AMYLOID PROTEIN FIBRILLOGENESIS
DISORDERS

<130> PROTEO.P03CI2

<140> 10/821,250

<141> 2004-04-08

<150> 60/461,655

<151> 2003-04-08

<150> 09/962,955

<151> 2001-09-24

<150> 09/938,275

<151> 2001-08-22

<150> 08/947,057

<151> 1997-10-08

<160> 108

<170> PatentIn Ver. 3.2

<210> 1

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<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
peptide

<400> 1

Arg Lys Arg Leu Gln Val Gln Leu Ser Ile Arg Thr
1 5 10

<210> 2

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
peptide

<400> 2

Lys Ala Phe Asp Ile Thr Tyr Val Arg Leu Lys Phe
1 5 10

<210> 3
<211> 13
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 3
Arg Gln Val Phe Gln Val Ala Tyr Ile Ile Ile Lys Ala
1 5 10

<210> 4
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 4
His Gln Thr Trp Thr Arg Asn Leu Gln Val Thr Leu
1 5 10

<210> 5
<211> 12
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 5
Ile Ser Asn Val Phe Val Gln Arg Leu Ser Leu Ser
1 5 10

<210> 6
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<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 6
Ala Ser Pro Pro Ser Val Lys Val Trp Gln Asp Ala
1 5 10

<210> 7
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<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 7
Arg Gly Leu Val Phe His Thr Gly Thr Lys Asn Ser Phe
1 5 10

<210> 8
<211> 12
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 8
Tyr Leu Ser Lys Gly Arg Leu Val Phe Ala Leu Gly
1 5 10

<210> 9
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 9
Asn Asp Gly Lys Trp His Thr Val Val Phe Gly His
1 5 10

<210> 10
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<220>
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<400> 10
Gly Asn Ser Thr Ile Ser Ile Arg Ala Pro Val Tyr
1 5 10

<210> 11
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<220>
<223> Description of Artificial Sequence: Synthetic peptide

<400> 11

Thr Leu Phe Leu Ala His Gly Arg Leu Val Phe Met
1 5 10

<210> 12
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<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 12
His Pro Asp Asp Phe Val Phe Tyr Val Gly Gly Tyr
1 5 10

<210> 13
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<220>
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peptide

<400> 13
Trp Leu Tyr Val Asp Asp Gln Leu Gln Leu Val Lys
1 5 10

<210> 14
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 14
Val Gln Ser Arg Gln His Ser Arg Ala Gly Gln Trp
1 5 10

<210> 15
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<212> PRT
<213> Artificial Sequence

<220>
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peptide

<400> 15
Ala Gly Gln Trp His Arg Val Ser Val Arg Trp Gly
1 5 10

<210> 16

<211> 12
<212> PRT
<213> Artificial Sequence

<220>
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<400> 16
Val Arg Trp Gly Met Gln Gln Ile Gln Leu Val Val
1 5 10

<210> 17
<211> 12
<212> PRT
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<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 17
Thr Trp Ser Gln Lys Ala Leu His His Arg Val Pro
1 5 10

<210> 18
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 18
Asp Gly Arg Trp His Arg Val Ala Val Ile Met Gly
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<210> 19
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<212> PRT
<213> Artificial Sequence

<220>
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peptide

<400> 19
Ala Pro Val Asn Val Thr Ala Ser Val Gln Ile Gln
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<210> 20
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<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 20

Lys Pro Arg Leu Gln Phe Ser Leu Asp Ile Gln Thr
1 5 10

<210> 21

<211> 12

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<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic peptide

<400> 21

Arg Asn Arg Leu His Leu Ser Met Leu Val Arg Pro
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<210> 22

<211> 12

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<213> Artificial Sequence

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<223> Description of Artificial Sequence: Synthetic peptide

<400> 22

Ala Ala Ser Ile Lys Val Ala Val Ser Ala Asp Arg
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<210> 23

<211> 12

<212> PRT

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<223> Description of Artificial Sequence: Synthetic peptide

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Ala Ser Phe Gly Phe Gln Thr Phe Gln Pro Ser Gly
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<210> 24

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

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Phe Lys Leu Pro Gln Glu Leu Leu Lys Pro Arg Ser

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<220>
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<400> 25
 Lys Asn Ser Phe Met Ala Leu Tyr Leu Ser Lys Gly
 1 5 10

<210> 26
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<220>
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<400> 26
 Leu His Val Phe Tyr Asp Phe Gly Phe Ser Asn Gly
 1 5 10

<210> 27
 <211> 12
 <212> PRT
 <213> Artificial Sequence

<220>
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<400> 27
 Val Leu Val Arg Val Glu Arg Ala Thr Val Phe Ser
 1 5 10

<210> 28
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 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic peptide

<400> 28
 Phe Leu Pro Leu Ala Leu Pro Asp Val Ala Pro Ile
 1 5 10

<210> 29
 <211> 12

<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

<400> 29
Gly Pro Leu Pro Ser Tyr Leu Gln Phe Val Gly Ile
1 5 10

<210> 30
<211> 12
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic
peptide

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Ser Val Gln Ile Gln Gly Ala Val Gly Met Arg Gly
1 5 10

<210> 31
<211> 416
<212> PRT
<213> Homo sapiens

<400> 31
Val Val Arg Leu Asn Asp Thr Val Gly Val Thr Lys Lys Cys Ser Glu
1 5 10 15

Asp Trp Lys Leu Val Arg Ser Ala Ser Phe Ser Arg Gly Gly Gln Leu
20 25 30

Ser Phe Thr Asp Leu Gly Leu Pro Pro Thr Asp His Leu Gln Ala Ser
35 40 45

Phe Gly Phe Gln Thr Phe Gln Pro Ser Gly Ile Leu Leu Asp His Gln
50 55 60

Thr Trp Thr Arg Asn Leu Gln Val Thr Leu Glu Asp Gly Tyr Ile Glu
65 70 75 80

Leu Ser Thr Ser Asp Ser Gly Gly Pro Ile Phe Lys Ser Pro Gln Thr
85 90 95

Tyr Met Asp Gly Leu Leu His Tyr Val Ser Val Ile Ser Asp Asn Ser
100 105 110

Gly Leu Arg Leu Leu Ile Asp Asp Gln Leu Leu Arg Asn Ser Lys Arg
115 120 125

Leu Lys His Ile Ser Ser Ser Arg Gln Ser Leu Arg Leu Gly Gly Ser
130 135 140

Asn Phe Glu Gly Cys Ile Ser Asn Val Phe Val Gln Arg Leu Ser Leu
145 150 155 160

Ser Pro Glu Val Leu Asp Leu Thr Ser Asn Ser Leu Lys Arg Asp Val
 165 170 175
 Ser Leu Gly Gly Cys Ser Leu Asn Lys Pro Pro Phe Leu Met Leu Leu
 180 185 190
 Lys Gly Ser Thr Arg Phe Asn Lys Thr Lys Thr Phe Arg Ile Asn Gln
 195 200 205
 Leu Leu Gln Asp Thr Pro Val Ala Ser Pro Arg Ser Val Lys Val Trp
 210 215 220
 Gln Asp Ala Cys Ser Pro Leu Pro Lys Thr Gln Ala Asn His Gly Ala
 225 230 235 240
 Leu Gln Phe Gly Asp Ile Pro Thr Ser His Leu Leu Phe Lys Leu Pro
 245 250 255
 Gln Glu Leu Leu Lys Pro Arg Ser Gln Phe Ala Val Asp Met Gln Thr
 260 265 270
 Thr Ser Ser Arg Gly Leu Val Phe His Thr Gly Thr Lys Asn Ser Phe
 275 280 285
 Met Ala Leu Tyr Leu Ser Lys Gly Arg Leu Val Phe Ala Leu Gly Thr
 290 295 300
 Asp Gly Lys Lys Leu Arg Ile Lys Ser Lys Glu Lys Cys Asn Asp Gly
 305 310 315 320
 Lys Trp His Thr Val Val Phe Gly His Asp Gly Glu Lys Gly Arg Leu
 325 330 335
 Val Val Asp Gly Leu Arg Ala Arg Glu Gly Ser Leu Pro Gly Asn Ser
 340 345 350
 Thr Ile Ser Ile Arg Ala Pro Val Tyr Leu Gly Ser Pro Pro Ser Gly
 355 360 365
 Lys Pro Lys Ser Leu Pro Thr Asn Ser Phe Val Gly Cys Leu Lys Asn
 370 375 380
 Phe Gln Leu Asp Ser Lys Pro Leu Tyr Thr Pro Ser Ser Ser Phe Gly
 385 390 395 400
 Val Ser Ser Cys Leu Gly Gly Pro Leu Glu Lys Gly Ile Tyr Phe Ser
 405 410 415

<210> 32
 <211> 964
 <212> PRT
 <213> Mus musculus

<400> 32
 Thr Ser Ile Ser Leu Tyr Met Lys Pro Pro Pro Lys Pro Gln Thr Thr
 1 5 10 15
 Gly Ala Trp Val Ala Asp Gln Phe Val Leu Tyr Leu Gly Ser Lys Asn
 20 25 30

Ala Lys Lys Glu Tyr Met Gly Leu Ala Ile Lys Asn Asp Asn Leu Val
 35 40 45
 Tyr Val Tyr Asn Leu Gly Met Lys Asp Val Glu Ile Leu Leu Asp Ser
 50 55 60
 Lys Pro Val Ser Ser Trp Pro Ala Tyr Phe Ser Ile Val Lys Ile Glu
 65 70 75 80
 Arg Val Gly Lys His Gly Lys Val Phe Leu Thr Val Pro Ser Ser Ser
 85 90 95
 Ser Thr Ala Glu Glu Lys Phe Ile Lys Lys Gly Glu Phe Ala Gly Asp
 100 105 110
 Asp Ser Leu Leu Asp Leu Thr Pro Glu Asp Thr Val Phe Tyr Val Gly
 115 120 125
 Gly Val Pro Ala Asn Phe Lys Leu Pro Ala Ser Leu Asn Leu Pro Ser
 130 135 140
 Tyr Ser Gly Cys Leu Glu Leu Ala Thr Leu Asn Asn Asp Val Ile Ser
 145 150 155 160
 Leu Tyr Asn Phe Lys His Ile Tyr Asn Met Asp Pro Ser Lys Ser Val
 165 170 175
 Pro Cys Ala Arg Asp Lys Leu Ala Phe Thr Gln Ser Arg Ala Ala Ser
 180 185 190
 Tyr Phe Phe Asp Gly Ser Ser Tyr Ala Val Val Arg Asp Ile Thr Arg
 195 200 205
 Arg Gly Lys Phe Gly Gln Val Thr Arg Phe Asp Ile Glu Ile Arg Thr
 210 215 220
 Pro Ala Asp Asn Gly Leu Val Leu Leu Met Val Asn Gly Ser Met Phe
 225 230 235 240
 Phe Ser Leu Glu Met Arg Asn Gly Tyr Leu His Val Phe Tyr Asp Phe
 245 250 255
 Gly Phe Ser Asn Gly Pro Val His Leu Glu Asp Thr Leu Lys Lys Ala
 260 265 270
 Gln Ile Asn Asp Ala Lys Tyr Arg Glu Ile Ser Ile Ile Tyr His Asn
 275 280 285
 Asp Lys Lys Met Ile Leu Val Val Asp Arg Arg His Val Lys Ser Thr
 290 295 300
 Asp Asn Glu Lys Lys Lys Ile Pro Phe Thr Asp Ile Tyr Ile Gly Gly
 305 310 315 320
 Ala Pro Gln Glu Val Leu Gln Ser Arg Thr Leu Arg Ala His Leu Pro
 325 330 335
 Leu Asp Ile Asn Phe Arg Gly Cys Met Lys Gly Ile Gln Phe Gln Lys
 340 345 350
 Lys Asp Phe Asn Leu Leu Glu Gln Thr Glu Thr Leu Gly Val Gly Tyr

355		360		365
Gly Cys Pro Glu Asp Ser Leu Ile Ser Arg Arg Ala Tyr Phe Asn Gly				
370		375		380
Gln Ser Phe Ile Ala Ser Ile Gln Lys Ile Ser Phe Phe Asp Gly Phe				
385		390		395
Glu Gly Gly Phe Asn Phe Arg Thr Leu Gln Pro Asn Gly Leu Leu Phe				
	405		410	415
Tyr Tyr Thr Ser Gly Ser Asp Val Phe Ser Ile Ser Leu Asp Asn Gly				
	420		425	430
Thr Val Val Met Asp Val Lys Gly Ile Lys Val Met Ser Thr Asp Lys				
	435		440	445
Gln Tyr His Asp Gly Leu Pro His Phe Val Val Thr Ser Ile Ser Asp				
	450		455	460
Thr Arg Tyr Glu Leu Val Val Asp Lys Ser Arg Leu Arg Gly Lys Asn				
	465		470	475
Pro Thr Lys Gly Lys Ala Glu Gln Thr Gln Thr Thr Glu Lys Lys Phe				
	485		490	495
Tyr Phe Gly Gly Ser Pro Ile Ser Pro Gln Tyr Ala Asn Phe Thr Gly				
	500		505	510
Cys Ile Ser Asn Ala Tyr Phe Thr Arg Leu Asp Arg Asp Val Glu Val				
	515		520	525
Glu Ala Phe Gln Arg Tyr Ser Glu Lys Val His Thr Ser Leu Tyr Glu				
	530		535	540
Cys Pro Ile Glu Ser Ser Pro Leu Phe Leu Leu His Lys Lys Gly Lys				
	545		550	555
Asn Ser Ser Lys Pro Lys Thr Asn Lys Gln Gly Glu Lys Ser Lys Asp				
	565		570	575
Ala Pro Ser Trp Asp Pro Ile Gly Leu Lys Phe Leu Glu Gln Lys Ala				
	580		585	590
Pro Arg Asp Ser His Cys His Leu Phe Ser Ser Pro Arg Ala Ile Glu				
	595		600	605
His Ala Tyr Gln Tyr Gly Gly Thr Ala Asn Ser Arg Gln Glu Phe Glu				
	610		615	620
His Glu Gln Gly Asp Phe Gly Glu Lys Ser Gln Phe Ser Ile Arg Leu				
	625		630	635
Lys Thr Arg Ser Ser His Gly Met Ile Phe Tyr Val Ser Asp Gln Glu				
	645		650	655
Glu Asn Asp Phe Met Thr Leu Phe Leu Ala His Gly Arg Leu Val Phe				
	660		665	670
Met Phe Asn Val Gly His Lys Lys Leu Lys Ile Arg Ser Gln Glu Lys				
	675		680	685

Tyr Asn Asp Gly Leu Trp His Asp Val Ile Phe Ile Arg Glu Lys Ser
 690 695 700
 Ser Gly Arg Leu Val Ile Asp Gly Leu Arg Val Leu Glu Glu Arg Leu
 705 710 715 720
 Pro Pro Ser Gly Ala Ala Trp Lys Ile Lys Gly Pro Ile Tyr Leu Gly
 725 730 735
 Gly Val Ala Pro Gly Arg Ala Val Lys Asn Val Gln Ile Thr Ser Val
 740 745 750
 Tyr Ser Phe Ser Gly Cys Leu Gly Asn Leu Gln Leu Asn Gly Ala Ser
 755 760 765
 Ile Thr Ser Ala Ser Gln Thr Phe Ser Val Thr Pro Cys Phe Glu Gly
 770 775 780
 Pro Met Glu Thr Gly Thr Tyr Phe Ser Thr Glu Gly Gly Tyr Val Val
 785 790 795 800
 Leu Asp Glu Ser Phe Asn Ile Gly Leu Lys Phe Glu Ile Ala Phe Glu
 805 810 815
 Val Arg Pro Arg Ser Ser Ser Gly Thr Leu Val His Gly His Ser Val
 820 825 830
 Asn Gly Glu Tyr Leu Asn Val His Met Arg Asn Gly Gln Val Ile Val
 835 840 845
 Lys Val Asn Asn Gly Val Arg Asp Phe Ser Thr Ser Val Thr Pro Lys
 850 855 860
 Gln Asn Leu Cys Asp Gly Arg Trp His Arg Ile Thr Val Ile Arg Asp
 865 870 875 880
 Ser Asn Val Val Gln Leu Asp Val Asp Ser Glu Val Asn His Val Val
 885 890 895
 Gly Pro Leu Asn Pro Lys Pro Val Asp His Arg Glu Pro Val Phe Val
 900 905 910
 Gly Gly Val Pro Glu Ser Leu Leu Thr Pro Arg Leu Ala Pro Ser Lys
 915 920 925
 Pro Phe Thr Gly Cys Ile Arg His Phe Val Ile Asp Ser Arg Pro Val
 930 935 940
 Ser Phe Ser Lys Ala Ala Leu Val Ser Gly Ala Val Ser Ile Asn Ser
 945 950 955 960

Cys Pro Thr Ala

<210> 33
 <211> 956
 <212> PRT
 <213> Mus musculus

<400> 33

Thr	Ala	Leu	Lys	Phe	His	Ile	Gln	Ser	Pro	Val	Pro	Ala	Pro	Glu	Pro	1	5	10	15
Gly	Lys	Asn	Thr	Gly	Asp	His	Phe	Val	Leu	Tyr	Met	Gly	Ser	Arg	Gln	20	25	30	
Ala	Thr	Gly	Asp	Tyr	Met	Gly	Val	Ser	Leu	Arg	Asn	Gln	Lys	Val	His	35	40	45	
Trp	Val	Tyr	Arg	Leu	Gly	Lys	Ala	Gly	Pro	Thr	Thr	Leu	Ser	Ile	Asp	50	55	60	
Glu	Asn	Ile	Gly	Glu	Gln	Phe	Ala	Ala	Val	Ser	Ile	Asp	Arg	Thr	Leu	65	70	75	80
Gln	Phe	Gly	His	Met	Ser	Val	Thr	Val	Glu	Lys	Gln	Met	Val	His	Glu	85	90	95	
Ile	Lys	Gly	Asp	Thr	Val	Ala	Pro	Gly	Ser	Glu	Gly	Leu	Leu	Asn	Leu	100	105	110	
His	Pro	Asp	Asp	Phe	Val	Phe	Tyr	Val	Gly	Gly	Tyr	Pro	Ser	Asn	Phe	115	120	125	
Thr	Pro	Pro	Glu	Pro	Leu	Arg	Phe	Pro	Gly	Tyr	Leu	Gly	Cys	Ile	Glu	130	135	140	
Met	Glu	Thr	Leu	Asn	Glu	Glu	Val	Val	Ser	Leu	Tyr	Asn	Phe	Glu	Gln	145	150	155	160
Thr	Phe	Met	Leu	Asp	Thr	Ala	Val	Asp	Lys	Pro	Cys	Ala	Arg	Ser	Lys	165	170	175	
Ala	Thr	Gly	Asp	Pro	Trp	Leu	Thr	Asp	Gly	Ser	Tyr	Leu	Asp	Gly	Ser	180	185	190	
Gly	Phe	Ala	Arg	Ile	Ser	Phe	Glu	Lys	Gln	Phe	Ser	Asn	Thr	Lys	Arg	195	200	205	
Phe	Asp	Gln	Glu	Leu	Arg	Leu	Val	Ser	Tyr	Asn	Gly	Ile	Ile	Phe	Phe	210	215	220	
Leu	Lys	Gln	Glu	Ser	Gln	Phe	Leu	Cys	Leu	Ala	Val	Gln	Glu	Gly	Thr	225	230	235	240
Leu	Val	Leu	Phe	Tyr	Asp	Phe	Gly	Ser	Gly	Leu	Lys	Lys	Ala	Asp	Pro	245	250	255	
Leu	Gln	Pro	Pro	Gln	Ala	Leu	Thr	Ala	Ala	Ser	Lys	Ala	Ile	Gln	Val	260	265	270	
Phe	Leu	Leu	Ala	Gly	Asn	Arg	Lys	Arg	Val	Leu	Val	Arg	Val	Glu	Arg	275	280	285	
Ala	Thr	Val	Phe	Ser	Val	Asp	Gln	Asp	Asn	Met	Leu	Glu	Met	Ala	Asp	290	295	300	
Ala	Tyr	Tyr	Leu	Gly	Gly	Val	Pro	Pro	Glu	Gln	Leu	Pro	Leu	Ser	Leu	305	310	315	320
Arg	Gln	Leu	Phe	Pro	Ser	Gly	Gly	Ser	Val	Arg	Gly	Cys	Ile	Lys	Gly				

325										330					335				
Ile	Lys	Ala	Leu	Gly	Lys	Tyr	Val	Asp	Leu	Lys	Arg	Leu	Asn	Thr	Thr				
			340					345					350						
Gly	Ile	Ser	Phe	Gly	Cys	Thr	Ala	Asp	Leu	Leu	Val	Gly	Arg	Thr	Met				
		355					360					365							
Thr	Phe	His	Gly	His	Gly	Phe	Leu	Pro	Leu	Ala	Leu	Pro	Asn	Val	Ala				
	370					375					380								
Pro	Ile	Thr	Glu	Val	Val	Tyr	Ser	Gly	Phe	Gly	Phe	Arg	Gly	Thr	Gln				
385					390					395					400				
Asp	Asn	Asn	Leu	Leu	Tyr	Tyr	Arg	Thr	Ser	Pro	Asp	Gly	Pro	Tyr	Gln				
			405						410					415					
Val	Ser	Leu	Arg	Glu	Gly	His	Val	Thr	Leu	Arg	Phe	Met	Asn	Gln	Glu				
			420					425					430						
Val	Glu	Thr	Gln	Arg	Val	Phe	Ala	Asp	Gly	Ala	Pro	His	Tyr	Val	Ala				
		435					440					445							
Phe	Tyr	Ser	Asn	Val	Thr	Gly	Val	Trp	Leu	Tyr	Val	Asp	Asp	Gln	Leu				
	450					455					460								
Gln	Leu	Val	Lys	Ser	His	Glu	Arg	Thr	Thr	Pro	Met	Leu	Gln	Leu	Gln				
465					470					475					480				
Pro	Glu	Glu	Pro	Ser	Arg	Leu	Leu	Leu	Gly	Gly	Leu	Pro	Val	Ser	Gly				
			485						490					495					
Thr	Phe	His	Asn	Phe	Ser	Gly	Cys	Ile	Ser	Asn	Val	Phe	Val	Gln	Arg				
			500					505					510						
Leu	Arg	Gly	Pro	Gln	Arg	Val	Phe	Asp	Leu	His	Gln	Asn	Met	Gly	Ser				
		515					520					525							
Val	Asn	Val	Ser	Val	Gly	Cys	Thr	Pro	Ala	Gln	Leu	Ile	Glu	Thr	Ser				
	530					535					540								
Arg	Ala	Thr	Ala	Gln	Lys	Val	Ser	Arg	Arg	Ser	Arg	Gln	Pro	Ser	Gln				
545					550					555					560				
Asp	Leu	Ala	Cys	Thr	Thr	Pro	Trp	Leu	Pro	Gly	Thr	Ile	Gln	Asp	Ala				
			565						570					575					
Tyr	Gln	Phe	Gly	Gly	Pro	Leu	Pro	Ser	Tyr	Leu	Gln	Phe	Val	Gly	Ile				
		580						585					590						
Ser	Pro	Ser	His	Arg	Asn	Arg	Leu	His	Leu	Ser	Met	Leu	Val	Arg	Pro				
		595					600					605							
His	Ala	Ala	Ser	Gln	Gly	Leu	Leu	Leu	Ser	Thr	Ala	Pro	Met	Ser	Gly				
	610					615					620								
Arg	Ser	Pro	Ser	Leu	Val	Leu	Phe	Leu	Asn	His	Gly	His	Phe	Val	Ala				
625					630					635					640				
Gln	Thr	Glu	Gly	Pro	Gly	Pro	Arg	Leu	Gln	Val	Gln	Ser	Arg	Gln	His				
			645						650					655					

Ser Arg Ala Gly Gln Trp His Arg Val Ser Val Arg Trp Gly Met Gln
 660 665 670
 Gln Ile Gln Leu Val Val Asp Gly Ser Gln Thr Trp Ser Gln Lys Ala
 675 680 685
 Leu His His Arg Val Pro Arg Ala Glu Arg Pro Gln Pro Tyr Thr Leu
 690 695 700
 Ser Val Gly Gly Leu Pro Ala Ser Ser Tyr Ser Ser Lys Leu Pro Val
 705 710 715 720
 Ser Val Gly Phe Ser Gly Cys Leu Lys Lys Leu Gln Leu Asp Lys Gln
 725 730 735
 Pro Leu Arg Thr Pro Thr Gln Met Val Gly Val Thr Pro Cys Val Ser
 740 745 750
 Gly Pro Leu Glu Asp Gly Leu Phe Phe Pro Gly Ser Glu Gly Val Val
 755 760 765
 Thr Leu Glu Leu Pro Lys Ala Lys Met Pro Tyr Val Ser Leu Glu Leu
 770 775 780
 Glu Met Arg Pro Leu Ala Ala Ala Gly Leu Ile Phe His Leu Gly Gln
 785 790 795 800
 Ala Leu Ala Thr Pro Tyr Met Gln Leu Lys Val Leu Thr Glu Gln Val
 805 810 815
 Leu Leu Gln Ala Asn Asp Gly Ala Gly Glu Phe Ser Thr Trp Val Thr
 820 825 830
 Tyr Pro Lys Leu Cys Asp Gly Arg Trp His Arg Val Ala Val Ile Met
 835 840 845
 Gly Arg Asp Thr Leu Arg Leu Glu Val Asp Thr Gln Ser Asn His Thr
 850 855 860
 Thr Gly Arg Leu Pro Glu Ser Leu Ala Gly Ser Pro Ala Leu Leu His
 865 870 875 880
 Leu Gly Ser Leu Pro Lys Ser Ser Thr Ala Arg Pro Glu Leu Pro Ala
 885 890 895
 Tyr Arg Gly Cys Leu Arg Lys Leu Leu Ile Asn Gly Ala Pro Val Asn
 900 905 910
 Val Thr Ala Ser Val Gln Ile Gln Gly Ala Val Gly Met Arg Gly Cys
 915 920 925
 Pro Ser Gly Thr Leu Ala Leu Ser Lys Gln Gly Lys Ala Leu Thr Gln
 930 935 940
 Arg His Ala Lys Pro Ser Val Ser Pro Leu Leu His
 945 950 955

<210> 34
 <211> 12
 <212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 34

Thr Arg Ile Ser Leu Gln Val Gln Leu Arg Lys Arg
1 5 10

<210> 35

<211> 13

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 35

Ala Lys Ile Ile Ile Tyr Ala Val Gln Phe Val Gln Arg
1 5 10

<210> 36

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 36

Gly Leu Ala Phe Val Leu Arg Gly Lys Ser Leu Tyr
1 5 10

<210> 37

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 37

Met Phe Val Leu Arg Gly His Ala Leu Phe Leu Thr
1 5 10

<210> 38

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

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Gly Met Ile Val Ala Val Arg His Trp Arg Gly Asp
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<210> 47
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<220>
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<210> 52
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1 5

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1 5

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1 5

<210> 55
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<210> 56

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<210> 62
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<210> 63
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<400> 65
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<210> 66
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<400> 66
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<210> 76
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<210> 77
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<400> 77
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<210> 78
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<210> 79
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<210> 80
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<210> 82
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<210> 83
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Gly Arg Leu Val Phe Ala Leu Tyr
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<210> 84
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Arg Leu Val Phe Ala Leu Gly Tyr
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<210> 85
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Thr Leu Phe Leu Ala His Gly Tyr
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<210> 86
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<400> 86

Leu Phe Leu Ala His Gly Arg Tyr
1 5

<210> 87
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peptide

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1 5

<210> 88
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<400> 88
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1 5

<210> 89
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<210> 90
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<210> 93
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<210> 98
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Gly Arg Trp His Arg Val Ala Tyr
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<400> 99
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<210> 100

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His Arg Val Ala Val Ile Met Tyr

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<210> 102

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Arg Val Ala Val Ile Met Gly Tyr

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<210> 103

<211> 8

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Gly Leu Ala Phe Val Leu Arg Tyr

1

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<210> 105
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<400> 105
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1 5

<210> 106
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<400> 106
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1 5

<210> 107
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1 5

<210> 108
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peptide

<400> 108

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1 5